1. Functional Dependencies:

Employees: EmployeeID -> First name, Last name, Age, Department Engineers: EmployeeID -> Highest Degree, Favorite Game Astronauts: EmployeeID -> Years Flying, Golf Handicap

Flight Control Operators: EmployeeID -> Chair Preference, Preferred Drink, Recommended Hangover

cure

Crew: EmployeeID, Tail Number ->

Spacecraft: Tail Number -> Name, WeightTons, Fuel Type, Crew Capacity

Systems: SysID -> Name, costUSD, Description Parts: Part ID -> Name, costUSD, Description

Catalog: SupID, PartID ->

Suppliers: SupID -> Name, AddressNum, AddressStreet, AddressSuffix, State, City, Payment Terms

2. Flight Control Operators EmployeeID [PK,FK] - Chair Preference Preferred Drink Employees Recommended Hangover Cure - EmployeeID [PK] - First Name Astronauts - Last Name - EmployeeID [PK,FK] Spacecraft Crew - Age Years Flying EmployeeID [PK,FK] - Tail Number [PK] - Position Golf Handicap Tail Number [PK,FK] - Name - WeightTons Engineers - Fuel Type - EmployeeID [PK,FK] - Crew Capacity - Highest Degree Favorite Video Game Systems Suppliers - SysID [PK] SupID [PK] - Name - Name - Cost USD - Cost USD Description - AddressNum - AddressStreet - AddressSuffix Parts State - PartID [PK] City Catalog - SupID [PK,FK] Cost USD PartID [PK,FK] Description

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3. In order for a database to be in 3NF it must already be in 1NF and 2NF which means that the database must have only atomic data values, no partial key attribute dependencies and no multiple key (transitive) dependencies. Going through the list of functional dependencies it can be see that each attribute of each relation is dependent on the key, the whole key and nothing but the key. By examining the ER diagram above it can be seen how each attirbute would conssist of atomic values and how even in associative tables there are no partial key dependencies.